



CHANGE THE PALLET

CHANGE THE PALLET | CHANGE THE PLANET

Meeting Outline

California Air Resources Board

March 9, 2017

I. Introductions

Change the Pallet (CTP): Educates and advocates for a national shift from wood to corrugated pallets, with the goal of protecting American workers, eliminating millions of shipping pounds, reducing carbon emissions, and saving consumers and taxpayers billions of dollars. CTP made global news when the World Bank's prestigious *Connect4Climate* program named it a "Knowledgeable Partner," and published [an article](#) titled "Change Pallets for Climate Change." CTP is a project of The Forward Edge Initiative, an Oregon-based nonprofit.

Roger Ballentine: Served President Clinton as Chairman of the White House Climate Change Task Force and Deputy Assistant to the President for Environmental Initiatives, and now advises many Fortune 500 firms as President of Green Strategies, Inc. His bio can be reviewed at: <http://www.greenstrategies.com/site/team/>.

II. Math Exercise – Set Up & Assumptions

- a. U.S. retailers each receive and ship tens of millions of pallets per year. By "receive and ship," we're referring to inbound palletized shipments from suppliers, and outbound palletized shipments to stores or other endpoints.
- b. Change the Pallet regularly exchanges information with IKEA. We know that IKEA receives and ships ~36 million loaded pallets per year. To build a baseline for our math exercise, we make two key assumptions:
 - (i) Office Depot also ships and receives 36 million palletized shipments.
 - (ii) Each company's 36 million pallet shipments are on trucks, and occur in the U.S.
- c. Using these assumptions, our model compares two "identical" retailer supply chains. **The only difference is that IKEA's 36 million annual palletized shipments (inbound and outbound) are on lightweight, recyclable corrugated pallets and Office Depot's are on ~50-lb wood ones.**
- d. In IKEA's case, the "end recipient" is always a store. Office Depot's end recipient could be one of its stores, or a public hospital, school or university in California.

- e. In the real world, some percentage of pallets — wood or corrugated — need to be replaced at the distribution center (DC). To make cleaner calculations, we're assuming all 18 million pallets that are received by the IKEA or Office Depot DC are reused to ship outbound to the end recipient.
- f. In sum, our two retailer systems each utilize 18 million pallets per year, and those 18 million pallets go through four truck shipments. Accordingly, as a starting point, IKEA's system trucks 2.88 billion pounds of pallet weight alone each year vs. Office Depot's. (The math is 18 million pallets times [x] four (4) truck segments per pallet times [x] ~40 fewer pounds per pallet, which is based on an average wood pallet weight of 50 lbs. and an average corrugated pallet weight of 10 lbs.)

III. LCAs & Pallet Production

- a. The publicly-available LCAs are inconclusive with respect to the environmental impact of making wood pallets versus corrugated ones. Of course, the former uses mature hardwoods and the latter uses more energy.
- b. The most complete analysis we've seen is a LCA released by the corrugated packaging industry, so it merits a grain of salt. Conversely, most LCAs relating to pallets are heavily slanted to the wood industry's objectives (and often do not account for fuel savings associated with reduced weight and fewer truck movements).
- c. Change the Pallet has reviewed all pallet-related LCAs we've found. Our conclusion is that, at scale, there is no discernable difference between making wood pallets versus making corrugated pallets when it comes to the production impact on the environment.
- d. When we launched Change the Pallet, we sent a White Paper to all 50 governors and treasurers. On P.5, it lays out our conclusion with respect to the production impact of making corrugated vs. wood pallets at scale.
- e. Intuitively, this conclusion makes sense. Making millions of paper bags to send groceries home is infinitely more energy intensive than making wood crates. However, it would be crazy to pack groceries in wood crates, send trucks to retrieve them from people's homes, and repeat. It is equally crazy that our country ships loaded pallets 10 billion times per year, and sends 25 million trucks to retrieve them from businesses.
- f. Accordingly, our model assumes that, for the production phase of making 18 million wood vs. corrugated pallets, IKEA and Office Depot are net zero.
- g. Importantly, there is one major difference between the models at the production phase: corrugated pallets are made here in the U.S., providing high-paying manufacturing jobs. Office Depot's wood pallets? Many are built in China.

IV. Trucks & Road Miles by Supply Chain Segment

The case for IKEA's system-wide palletized shipments on corrugated pallets vs. Office Depot's wood pallets is not much of a debate. *Importantly, while this math problem assumes that each company utilizes 18 million pallets, there are four (4) truck movement segments for each pallet that we'll tackle one-by-one.*

Segment 1: Transporting to Point of First Use

- a. To move 18 million wood pallets from the point of manufacturing to the point of first use requires 45,000 trucks. IKEA's system only requires 10,000 trucks. This is because only 400 wood pallets fit on a truck. Conversely, ~1,800 corrugated pallets can be shipped "Knocked Down Flat" for assembly at the point of first use.
- b. Assuming an average trip of 100 road miles from the point of manufacturing to the point of first use, **IKEA's model is avoiding 35,000 trucks traveling 3.5 million road miles each year for this segment alone.**

Segment 2: Loading and Shipment to DC's

- a. IKEA's suppliers load corrugated pallets that are custom-dimensioned to optimize pallet and truck bed volume, thereby reducing the amount of empty space in the outbound truck.
- b. Conversely, the U.S. pallet market is predominately 48 x 40 wood pallets, which limit the available volume of a truck bed. For example, most trucks in the U.S. that are loaded with palletized loads go down the road about 70-85% full. Corrugated pallets get the truck much closer to 100%. Our "White House Presentation" that was previously provided includes a slide that shows how corrugated pallets maximize the use of truck bed volume (p.8).
- c. **IKEA reports an increase of 20-33% in "truck efficiency"** (depending on region and supply chain segment) through use of corrugated pallets. **IKEA defines "truck efficiency" as moving the same amount of product on fewer trucks. For example, if IKEA used 100 full trucks to move Product A with wood pallets, it now needs only 80 full trucks.**
- d. In most cases, about 24 loaded wood pallets can fit on a truck; therefore, in our model, Office Depot's suppliers employ 750,000 trucks to move 18 million loaded pallets in this segment.
- e. The low end of IKEA's published "truck efficiency" gains states that, thanks to corrugated pallets, 20% fewer trucks are needed to move those same 18 million palletized loads from suppliers to DC's. **Compared to Office Depot in this model, IKEA needs 150,000 fewer trucks for this segment alone.**
- f. Typically, the U.S. manufacturing centers of major suppliers are spread out, so we're applying an average trip from the Suppliers to the DC's of 500 road miles. That's probably conservative. **By using corrugated pallets, IKEA has cut 75 million road miles in this segment alone.**

Segment 3: DC's to Stores

- a. The model is the same for the DC-to-stores segment and, as noted, we're assuming each wood and corrugated pallet that is received by the DC is now being used for the outbound-to-store segment.
- b. Once again, IKEA and Office Depot are each moving 18 million loaded pallets by truck from DC's to stores, and once again **corrugated pallets are reducing IKEA's truck requirements for the segment by 150,000 trucks per year**. This time, we're assuming only 250 miles on average from DC to store, **so IKEA's model is cutting 37.5 million road miles per year in this segment alone**.

Segment 4: Removal from End-Recipient

- a. Once pallets are unloaded at the store, Office Depot's employees must handle, move, and store those 18 million wood pallets, and ultimately figure out how to remove them from the premises. Of course, many of the 18 million pallets in Office Depot's supply chain are handled by employees of the state of California, or its public universities, hospitals and schools.
- b. **The costs, and human impact, of handling wood pallets at the end-recipient level are very high.** The testimony of IKEA's Portland store manager, Ms. Alex Zini, is very compelling in this regard. Ms. Zini testified in 2016 before the Oregon House Committee on Transportation and Economic Development in support of HB 4089, which garnered 36 co-sponsors. Had it passed, suppliers to Oregon's state facilities would have been required to ship on lightweight, recyclable pallets (when shipping palletized loads).
- c. Oregon HB 4089 was killed by the National Wood Pallet and Container Association and its affiliate, Western Pallet Association. As stated by lobbyists in an email to members: **"We must kill this cardboard pallet bill for the good of the wood pallet industry, as well as the Oregon economy. If it passes in Oregon, it will move to other states."** A copy of this e-mail is included in the packet accompanying this meeting outline.
- d. A copy of Ms. Zini's testimony is provided. Notably, it underscores fewer worker injuries, lower store P&L costs, a more gender-balanced workforce, operational efficiencies (e.g., not having to dispose of wood pallets), and overall improved store morale. **In sum, it strikes us as beyond reproach that California's state employees would be better off if corrugated pallets showed up on campuses and at facilities.** Ms. Zini's testimony reinforces that assertion.
- e. The wood pallet lobby also tells us that Office Depot's 18 million wood pallets will be reused or recycled after delivery to the end recipient. National municipal landfill reports tell a different story, namely that 2-3% of landfill mass in the U.S. is made up of discarded wood pallets.
- f. In California, the end point for wood pallets is especially important due to susceptibility to forest fires. California has its fair share of wood pallet dumping grounds called "graveyards," and one only need do a YouTube search to see what happens when they go up in flames.

- g. Returning to our model, Office Depot needs 45,000 trucks to remove those pallets from stores. Applying a conservative average removal trip of 100 miles means Office Depot's model requires an additional 4.5 million road miles versus IKEA's model.

V. Conclusions & Questions

Part 1

- a. In this case study, IKEA and Office Depot are each shipping and receiving 36 million pallets over the course of one year.
- b. By using – and, notably, by directing their suppliers to use — corrugated pallets instead of wood pallets, IKEA employs 380,000 fewer trucks than Office Depot.
- c. Applying our average distances for each of the four truck segments, these 380,000 fewer trucks are traveling 120.5 million fewer road miles per year.
- d. This works out to be almost **21 million gallons of diesel fuel** saved, in addition to approximately **470 million pounds of CO2 emissions** reduced. This converts to ~210,000 metric tons, which is significantly more than IKEA reports with respect to annual CO2e reductions as a result of this program. We hypothesize that IKEA is not accounting for Segment 4 and/or its global supply chain has fewer truck miles than assumed in this exercise.
- e. The good news is that parts of this comparative case study are not hypothetical. Today, ~98% of the pallets shipped and received by IKEA globally are on corrugated pallets. That's up from 0% corrugated pallets in 2007. Our study of IKEA's so-called HM NOW initiative to increase truck efficiency, reduce costs and emissions, and take trucks off the road is included in the White Paper previously referenced.
- f. **IKEA's number is ~75,000 fewer metric tons of CO2e annually through this program. We think they're underreporting. IKEA formally launched HM NOW in 2012, meaning they've reduced CO2e by some 500,000 metric tons.**
- g. IKEA is also saving billions of dollars through this switch, which makes sense when you've cut global truck usage by 20-33%. As noted, Ms. Zini's testimony demonstrates the many significant efficiencies and savings categories. **We believe it is self-evident that the efficiencies, cost savings, fewer injuries and other advantages Ms. Zini sees at the store level can be realized by California's public schools, hospitals, universities — and the employees that serve them — by receiving corrugated pallets instead of wood ones.**

Part 2

- h. Office Depot is not just failing to implement the most efficient and cost effective model. It's playing a central role in creating a U.S. wood pallet monopoly, but it's not alone. **Like Office Depot, many of the biggest U.S. retailers require by policy that their suppliers ship to their DC's on wood pallets.**

- i. Notable reasons for requiring wood pallets are resistance to change (i.e., this is the way we've always done it), and "locked-in" contracts with wood pallet companies such as the Australian firm CHEP, which owns the largest share of the U.S. pallet market. In other cases, retailers don't want to incur the minimal investment costs required to "close" racking systems in their DC's, which should be closed to protect workers and inventory. Finally, retailers have not incurred pressure to change.
- j. That monopoly works like this: 3M, for example, is required to ship to Office Depot on wood pallets. While 3M has smaller clients across the country that would be more than happy to accept corrugated pallets, is 3M going to split its supply chain? Of course not. Will it use its clout with Office Depot, a company that pays it hundreds of millions of dollars each year? Again, of course it won't.
- k. The net effect is a country where most major manufacturers are forced to ship on costly, heavy, inefficient wood pallets to service their biggest clients, thereby creating a de facto monopoly.
- l. In terms of scale, each year there are an estimated 10 billion palletized shipments in the U.S. Again, that does not include the trucks required to move pallets to the first point of use, or away from the end recipient.
- m. How ingrained is this monopoly? Two examples:
 - (i) REI is a sustainability leader with a mission rooted in conservationism. Nevertheless, REI has refused to take the very minimal step of allowing their manufacturers to ship to REI on corrugated pallets. We've met with both Columbia and Patagonia. Both were sympathetic, but both also shrugged their shoulders. Retailers write the checks and call the shots when it comes to pallets and transport.
 - (ii) Disney tells a more striking story. They've adopted corrugated pallets for the part of their supply chain they control, which is shipments from their DC's to Disney stores. However, they use wood for shipments to Target. Disney could gain efficiency and reap the benefits of corrugated pallets by shipping them to Target as well, but Target requires shipments on wood pallets.

VI. Why & Who's Paying

- a. We're asked all the time why U.S. retailers aren't adopting the IKEA model. The reasons vary, but the short answer is inertia, investment and—most importantly—they've figured out how to offload most of the costs of this system onto states, consumers and American taxpayers.
- b. Put simply, those 120.5 million extra road miles in Office Depot's system (vs. IKEA) are causing wear and tear to highways, added emissions, traffic, additional worker injuries, and other immense costs that come with systemic leakage of this scale. Those costs are borne by society and taxpayers.

- c. This is why we created Change the Pallet. To tell this story and advocate for the American people. It is clear the U.S. wood pallet monopoly is causing substantial harm to the environment and to the American people (financially). Since the markets are not self-regulating (and, indeed, are acting inconsistently with free market principles), it is incumbent upon policy-makers to step in. We submit that similar taxpayer-impacting irregularities led to substantive—and effective—policy action with respect to plastic grocery bags and waste reduction efforts.

VI. Policy Prescriptions

- a. We're incredibly fortunate to have Roger Ballentine working with us here at Change the Pallet. While serving President Clinton, he authored and implemented many of the country's most important and effective sustainability policies. When California chooses to take action, we can't imagine a better set of folks than Roger and his Green Strategies team to lend a hand.
- b. Before turning matters over to Roger, there are three actions that merit discussion¹:

(i) Occam's Razor:

The pragmatic solution for policy-makers is to turn the tables. Specifically, if retailers can demand shipments on wood pallets, *why can't* California's agencies, hospitals, schools and public universities set policies to drive shipments on corrugated pallets?

Put another way, Change the Pallet advocates for a change of public bid specs to create a preference for shipments on lightweight, 100% recyclable pallets. For example, a specification could require (or express a strong decision preference for) the use of pallets that weigh less than 13 lbs.

Incentivizing companies via winning bid specs should alter commercial practices, thereby leveling the playing field nationally. If that doesn't do the trick, stronger action could be taken down the road.

(ii) Leveraging Procurement Dollars & Market Competition:

A "grand bargain" option also exists. Specifically, California could leverage Amazon's efforts to disrupt the university and public sector markets through its new Amazon Business unit.

In this model, a "global" deal is struck whereby Amazon Business commits to shipping on corrugated pallets to California's public hospitals, schools, facilities and universities.

This approach would help open the U.S. market to corrugated pallets and, as our presentation demonstrates, the positive environmental impact for California would be tremendous. We also can (and would be pleased to) demonstrate that such an "enterprise-

¹ Following the meeting, CTP was reminded that California is the USDA's largest client when it comes to school lunch programs. The USDA's largest supplier is DLA. Last year, DLA told us that, if USDA required them to ship to public schools on corrugated pallets, it would have no choice but to implement via its bid specs. When told of this, USDA said "show us the schools." **A strong argument can be made that a letter from Superintendent Torlakson to the USDA would demonstrate that demand.**

wide” shift to corrugated pallets would save California tens of millions of dollars (net) per year (and perhaps hundreds of millions).

(iii) LCA & Support for Change the Pallet:

We’re at a disadvantage without an independent LCA. California certainly has the resources, and your universities have the great minds to fix that problem. Naturally, our organization and Roger’s are prepared to help, and Roger brings a ton of LCA experience and expertise.

Note: Roger Ballentine offered his view that the clear benefits of weight reduction and loading efficiencies suggest that moving forward with a new spec for incoming shipments should not require a full LCA. Change the Pallet concurs.

In terms of Change the Pallet, we could use a hand. It’s our understanding that California has committed resources to initiatives and non-profits committed to reducing trucks miles and emissions. We’d appreciate any guidance the Air Resources Board might be able to provide in terms of grants or support.

VII. Closing Points from Roger Ballentine

- Clinton Administration – when faced with an unfriendly Congress and budgetary challenges, we used the buying power of the government to promote hybrid vehicles and bio-based products.
- Walmart has driven tremendous changes in product design and packaging by demanding the removal of toxins, recyclable materials and reduced packaging – and the industry responded.
- It is clear the “pull” from major consumer organizations through Bid Spec is an effective and politically viable approach.
- California’s leadership in driving more sustainable business practices is unmatched. Creating a more competitive market in the pallet industry will drive better environmental outcomes for the people and taxpayers of California – and beyond.